Navy AEHF and TSAT Communications

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Deputy Chief Engineer SPAWAR 05

29 June 2005

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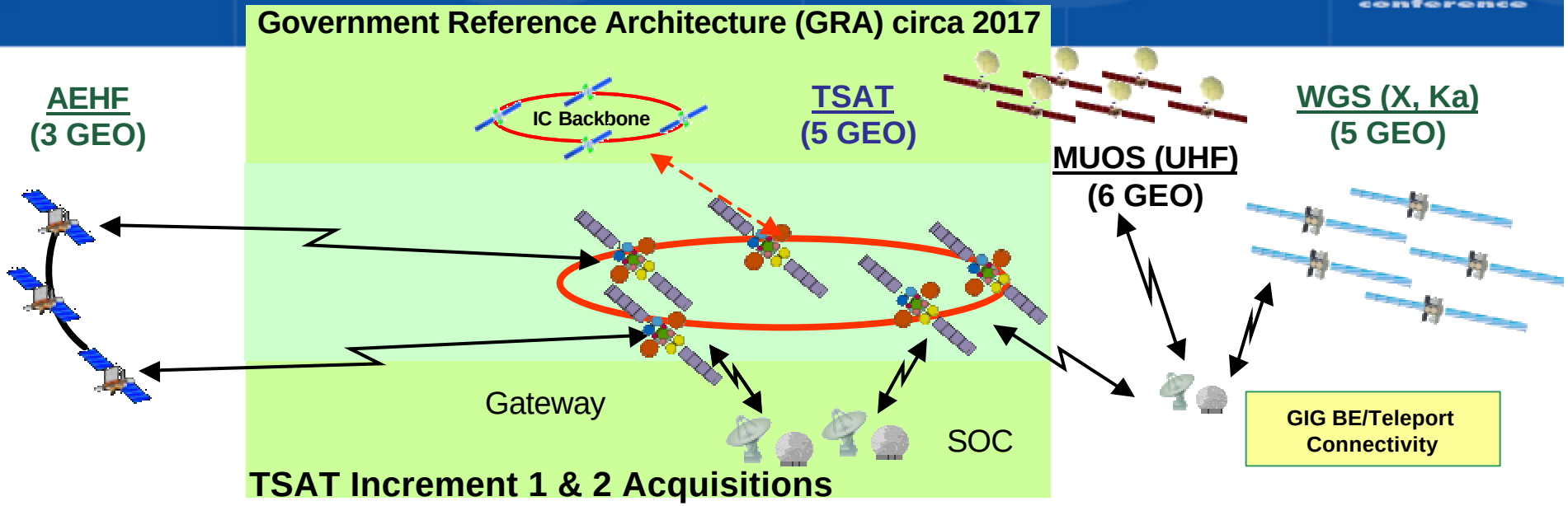
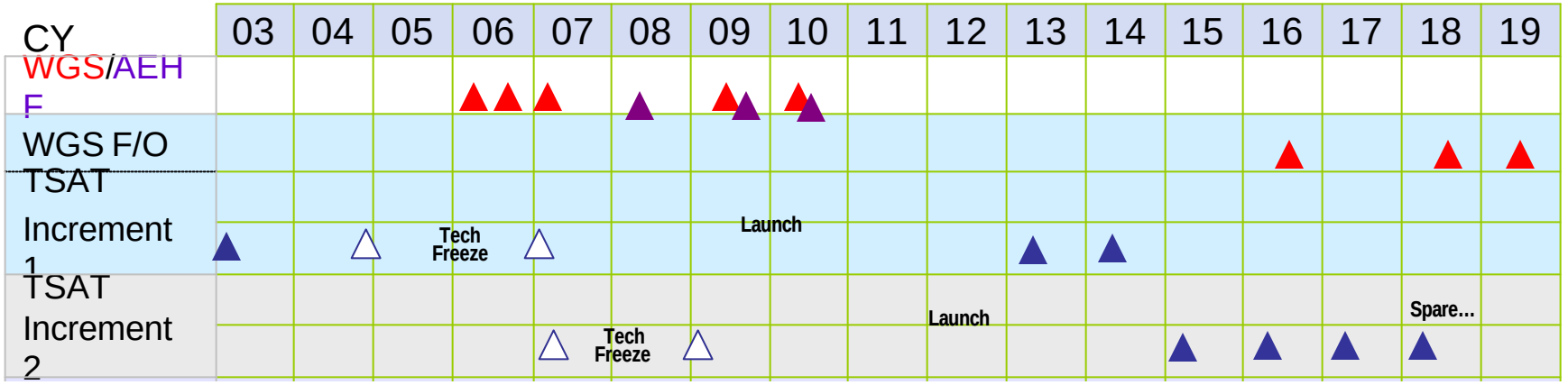
Ms. Michelle Bailey

Communications and Networking Session

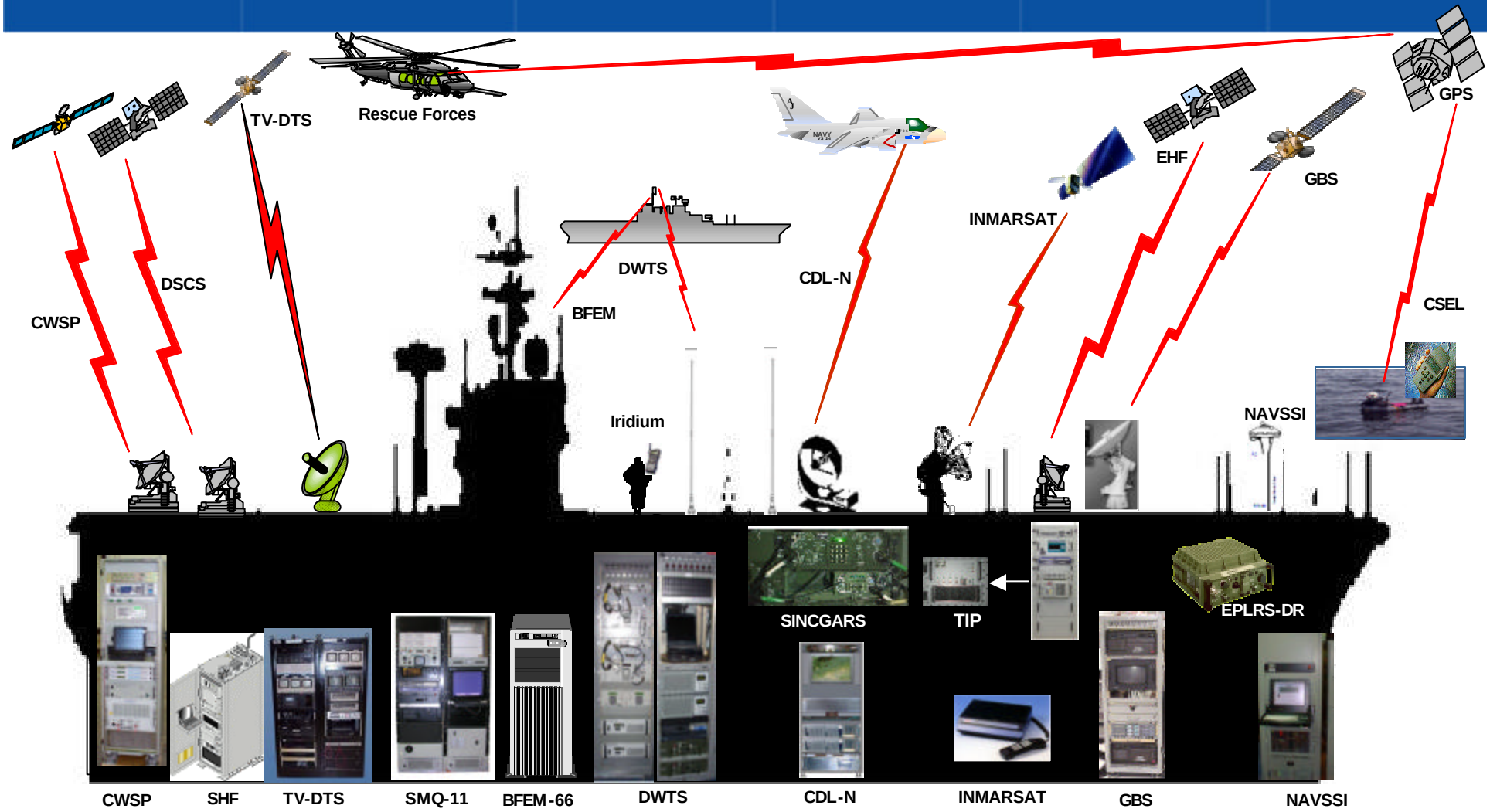
Future Space Segment



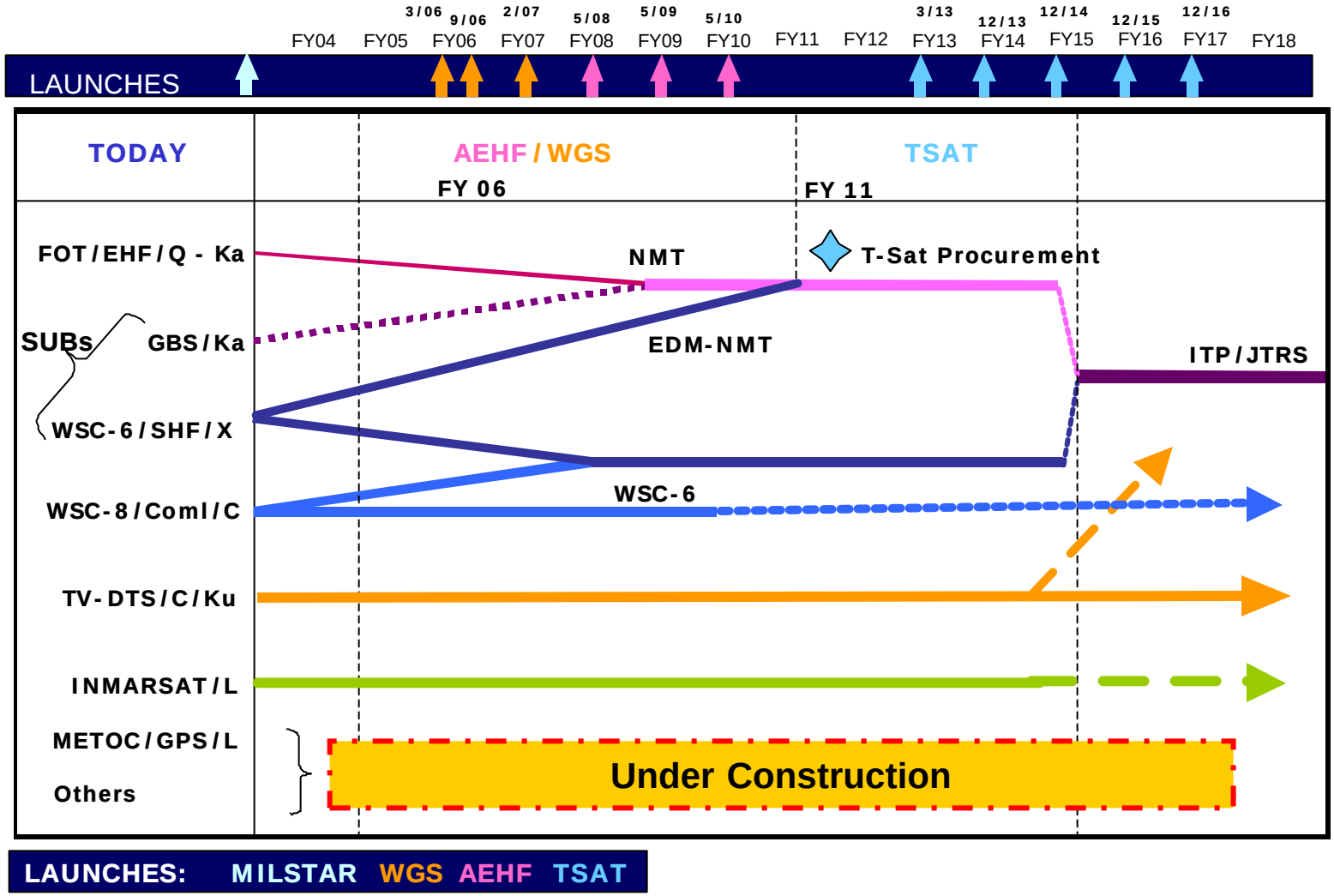


TSAT Relationship to Space Radar Continues to Evolve

PMW 170 Programs



Terminal Migration



NMT Program Overview

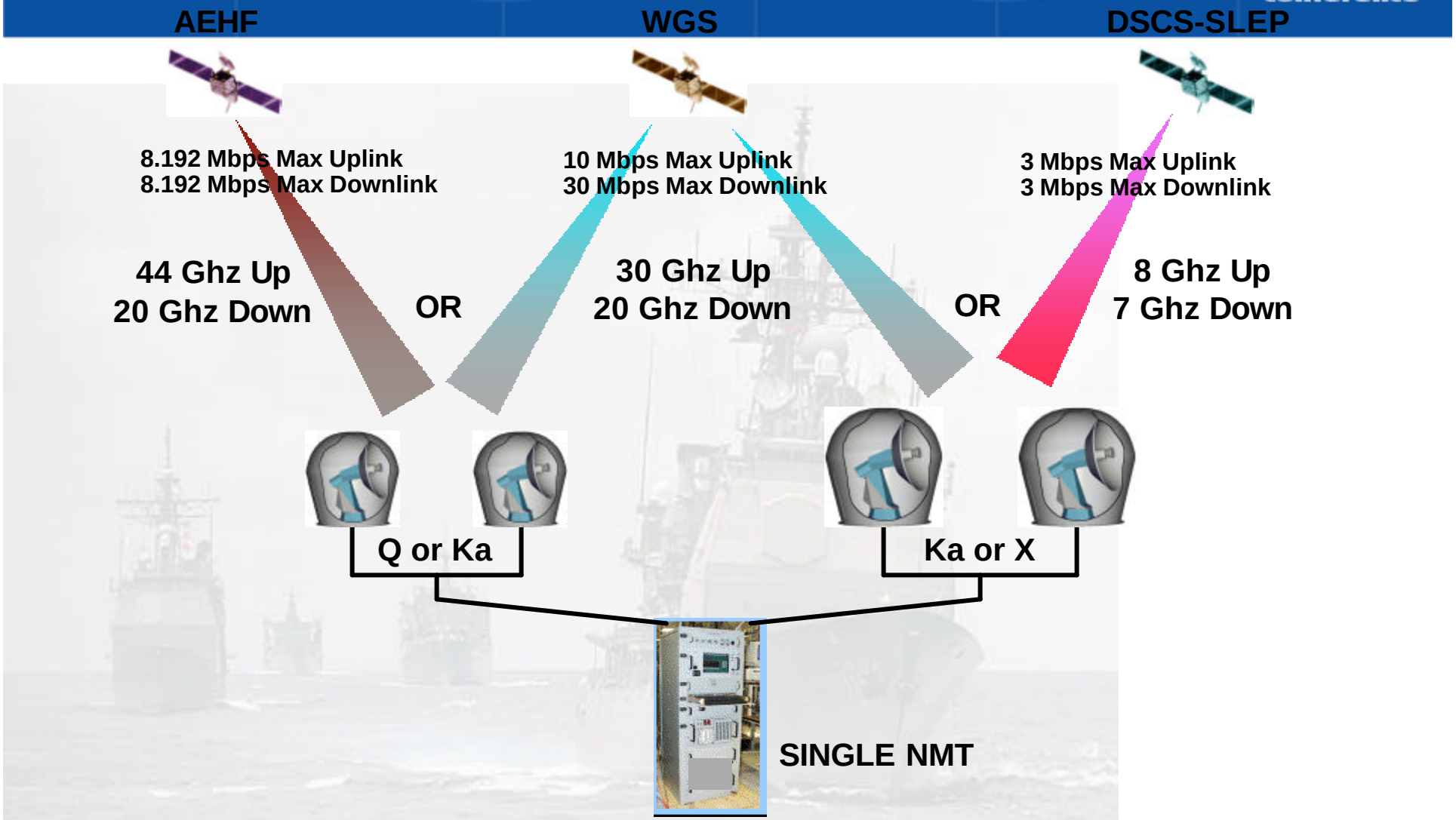
- Navy's Component Of The Joint AEHF Satellite Program (Ship, Sub, Shore) Is The Navy Advanced Extremely High Frequency (AEHF) Multiband Terminal (NMT) Program:
  - o All AN/USC-38 Terminals Will Be Phased Out And Replaced By The NMT Terminal
  - o The NMT Communicates With AEHF Satellites and is Backwards Compatible With Existing On Orbit EHF Satellites
  - o NMT Provides Upgrade Kits For Shipboard Terminals To Communicate Two Way Ka-band On Wideband Gapfiller Satellites (WGS)
  - o NMT Has An Option For Shipboard Terminals To Communicate With X-band Using The Defense Satellite Communications System (DSCS) and WGS

TERMINAL UPLINK CAPACITY IMPROVEMENTS		
NESP	**Capability**	**NMT**
512 Kbps	**Ship Requirement**	**2.048 Mbps**
256 Kbps	**Submarine Requirement**	**512 Kpbs**
1.544 Mbps	**Shore Requirement**	**8.192 Mbps**

NMT Provides a Fourfold Increase in Data Rate Capacity

Mbps: Mega Bits Per Second
Kbps: Kilo Bits per Second
CG: Communications Group
NESP: Navy EHF Satellite Communications Program
AG: Antenna Group

NMT Flexibility



One NMT Terminal, Two Simultaneous Links

NMT Fielding Schedule

Revised NMT Fielding Plan Based on Production Beginning FY10

OPN Funded	FY10	FY11	FY12	FY13	FY14	FY15	Total
Small Ship[1]							
CG	2	5	6	5	4	5	**27**
DDG	3	12	9	8	8	13	**53**
LPD	1	3	4	3	3	3	**17**
LSD	0	2	0	3	3	4	**12**
	6	**22**	**19**	**19**	**18**	**25**	**109**
Large Ship[2]							
AGF	4	0	0	0	0	0	**4**
CV / CVN / CVNX	2	6	4	4	4	4	**24**
LCC	2	2	0	0	0	0	**4**
LHA	0	2	2	4	2	0	**10**
LHD	0	2	4	4	4	2	**16**
	8	**12**	**10**	**12**	**10**	**6**	**58**
Total Ship Installs	**14**	**34**	**29**	**31**	**28**	**31**	**167**
Submarine							
SSBN / SSGN[3]	1	3	5	5	4	4	**22**
SSN (Los Angeles Class)[3]	3	11	10	8	9	8	**49**
SSN (Seawolf Class)[3]	0	1	1	1	0	0	**3**
SSN (Virginia Class Vaiant)[4]	0	1	1	1	1	0	**4**
	4	**16**	**17**	**15**	**14**	**12**	**78**
Shore[5]							
Operations (Shore)	3	6	9	7	13	11	**49**
Training (Ship / Sub / Shore)	6	0	0	0	0	0	**6**
Test (Ship / Sub / Shore)	3	2	0	0	0	0	**5**
	12	**8**	**9**	**7**	**13**	**11**	**60**
Total OPN Funded	**30**	**58**	**55**	**53**	**55**	**54**	**305**

SCN Funded	FY10	FY11	FY12	FY13	FY14	FY15	Total
CV / CVN / CVNX	0	2	0	2	0	0	**4**
DDG	0	0	3	3	3	0	**9**
JCC (X)	0	0	2	2	2	0	**6**
Total OPN Funded	**0**	**2**	**5**	**7**	**5**	**0**	**19**
Grand Total	**30**	**60**	**60**	**60**	**60**	**54**	**324**

Quantities reflect NMT Communication Group terminal installs (i.e. systems) as follows:

[1]Small Ship = 1 CG and 4 AGs

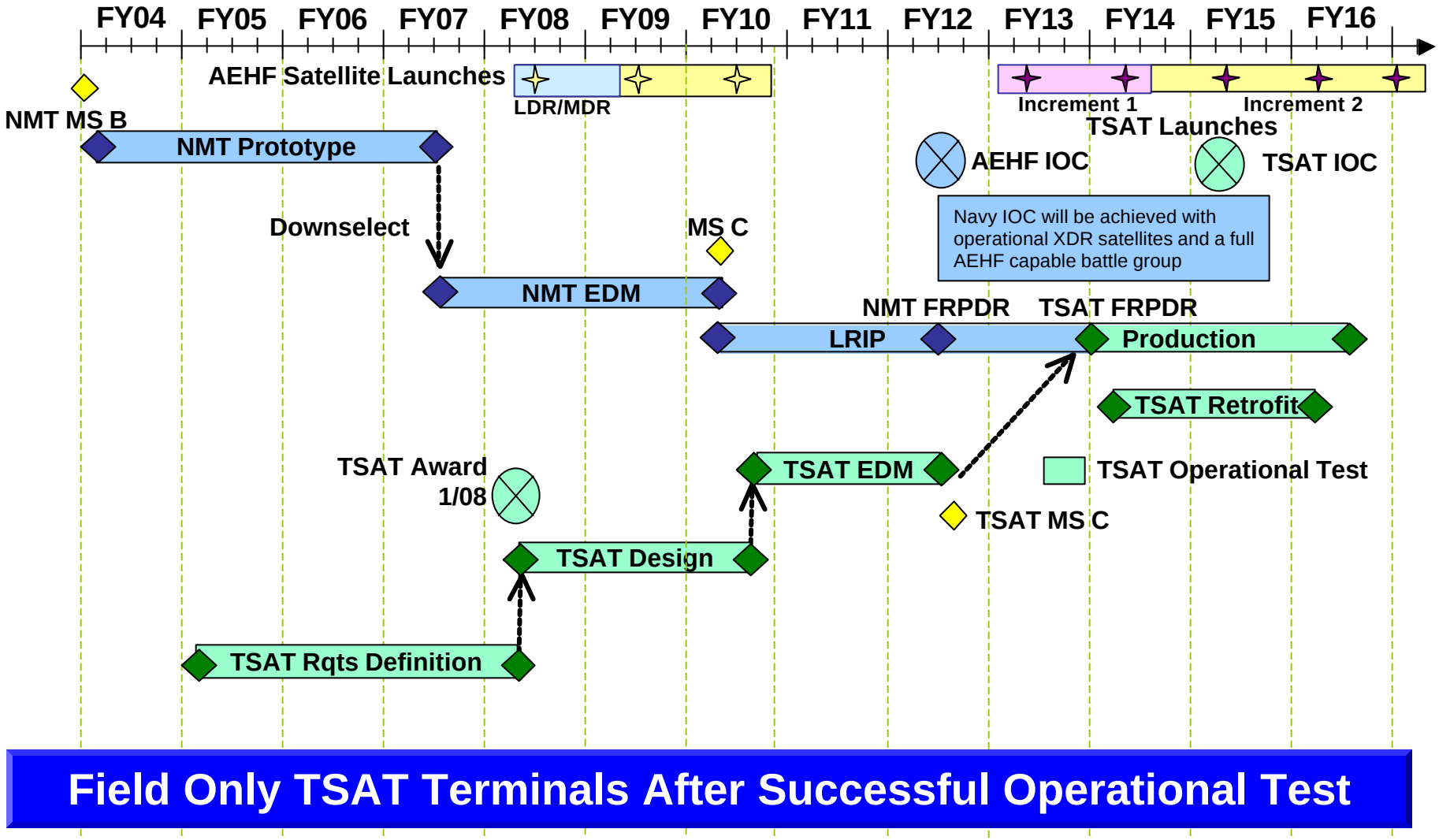
[2]Large Ship = 2 CGs and 8 AGs

[3]Sub = 1 CG, 1 Mast Antenna, 1 Periscope

[4]VCV = 1 CG and 2 Mast Antennas

[5]Shore = 1 CG and 1 AG

NMT Program Schedule (TSAT Notional)



Field Only TSAT Terminals After Successful Operational Test

TSAT Vision

- An Internet-Like Transport Architecture Between Space, Air and Ground Nodes
  - High Bandwidth - Integrated DoD, IC, and Civil Space Infrastructure – Cooperatively Managed
  - Increased Throughput RF Links and New High Performance Laser Communications
    - Up to 330 Mbps Shared RF Downlink to a Navy Strike Group
  - Critical Element of Global Information Grid (GIG) Integrated Architecture
    - Transformational Satellite (TSAT) is the Space Extension of the GIG
    - Black (Unclassified) Transport Core
    - Satellite IPv6 Packet Switching

TSAT is a Key FORCEnet Enabler for Beyond Line of Sight

TSAT Value to Operations

Enhanced Capability

- Network Centric
- High Capacity
- Secure

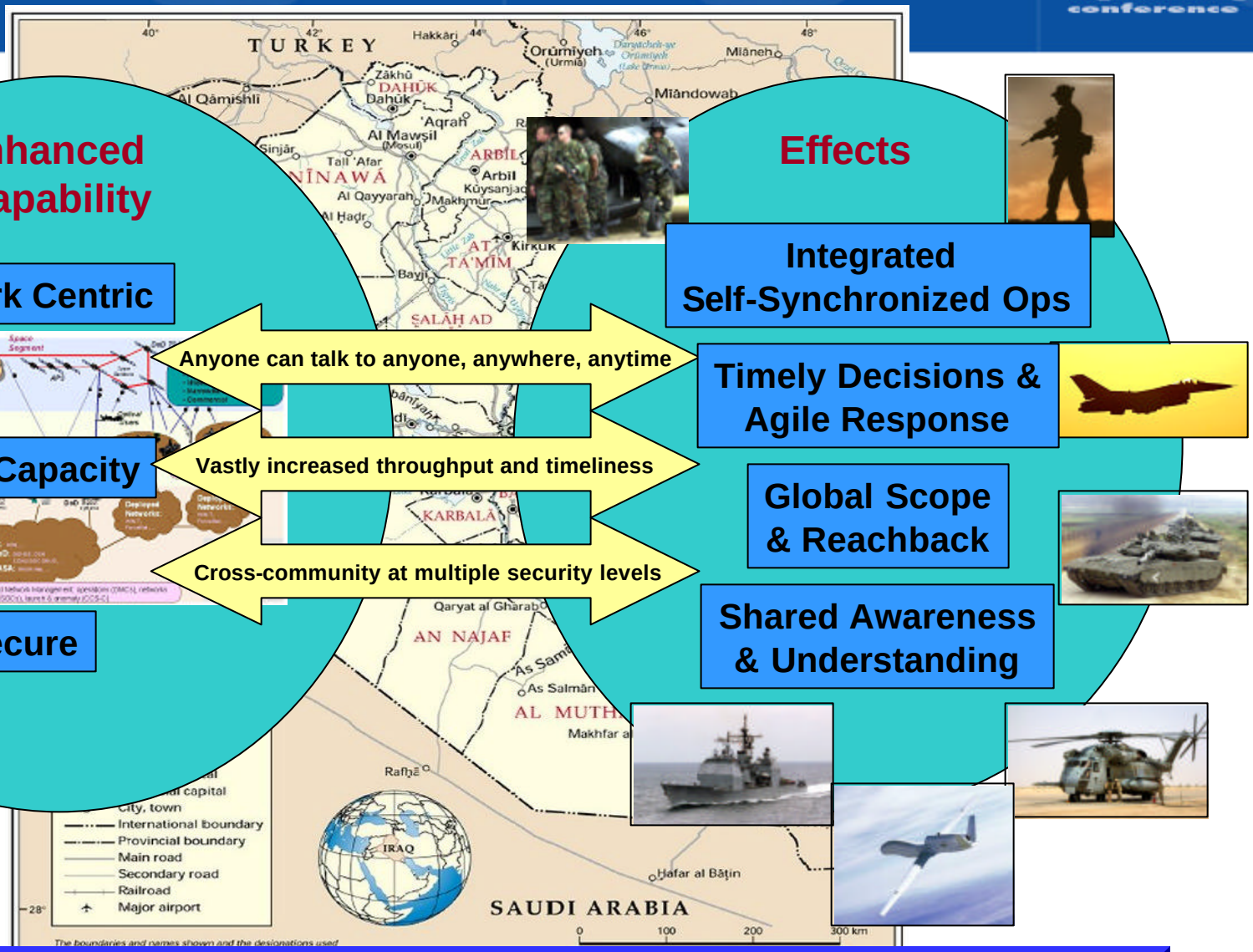
Anyone can talk to anyone, anywhere, anytime

Vastly increased throughput and timeliness

Cross-community at multiple security levels

Effects

- Integrated Self-Synchronized Ops
- Timely Decisions & Agile Response
- Global Scope & Reachback
- Shared Awareness & Understanding



TSAT Throughput = 10 X AEHF Throughput

Facts of Life

- CONOPS
- RESTORAL
- Maintenance and Maintenance Training
  - Train the right people
  - Keep them trained
- Use the CASREP System
  - CASCOR Lessons Learned
- Tech Manual Feedback

We're All In This Together

Questions?

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